Claims

1. Mixing apparatus comprising a container base and a container lid, the container lid having mounted thereon mixing means, the mixing means extending through the lid and having, at one end, means for connection to a drive motor external to the container and, at the other end, a mixing element for mixing the contents of the container when the drive means is operated, the mixing means comprising a shaft portion locatable through an opening in the lid and incorporating the connection means, and a mixing element portion associated with the shaft portion for rotation therewith, the container lid comprising a rim portion defining a circumferential slot into which the top edge of the container is located when the lid and container are assembled.

2. Mixing apparatus according to claim 1 wherein the container lid rim portion is formed with successive, oppositely-directed circumferential portions, one of the portions lying closely adjacent to the inner side wall of the container when the lid and container are assembled, and defining one side of the slot, and extending into the container.

3. Mixing apparatus according to claim 2 wherein the other of said circumferential portions is spaced inwardly of the side wall and has a curvilinear join with said one portion.

4. Mixing apparatus according to any one of claims 1, 2 or 3 wherein the circumferential slot is defined by an outer portion arranged to extend around the outer top edge of the container, and an inner portion arranged to extend into the container and in contact with the inner wall of the container.

5. Mixing apparatus according to claim 4 wherein the inner portion extends over a greater distance than the outer portion in the axial direction of the container, such distance being between twice and six times said distance.

6. Mixing apparatus according to any one of claims 2 to 5 wherein an outwardly convex portion is formed on the lid within the rim portion, the convex portion including the opening into which the mixing means is located.

7. Mixing apparatus according to claim 6 wherein the outwardly convex portion is of curvilinear dome shape and the mixing means is located centrally thereof.

8. Mixing apparatus according to any one of the preceding claims comprising a support for an assembled container and lid with the lid located on the support, and a clamping member movable to engage the end of the container opposite the lid and locate the assembly during operation of the mixing means.

9. Mixing apparatus according to claim 8 wherein the clamping member is reciprocally movable and, upon contacting the container to clamp the assembly, applies a predetermined force to the container in the direction towards the support.

10. Mixing apparatus according to claim 9 wherein the clamping member is connected to a fixed member through spring means and, upon the clamping force exceeding a predetermined level, the spring means compresses and a signal is generated to stop movement of the clamping member.

11. Mixing apparatus according to any one of claims 8, 9 or 10 wherein the clamping member includes a clamping surface engageable with the container and extending beyond the side edges of the container and comprising switch means for detecting an obstruction to a clamping action.

12. Mixing apparatus according to any one of the preceding claims wherein the container lid is nestable or stackable with other container lids, when not assembled with the container base, one container lid being located inside another.

13. Mixing apparatus according to any one of the preceding claims wherein container lids assembled with the mixing means are arranged to be nestable or

stackable with other container lids, when not assembled with the container bases, one container lid being located inside another.

14. Mixing apparatus according to any one of the preceding claims wherein the mixing element portion is arranged to be assembled with the shaft portion after the shaft portion is located in said opening.

15. Mixing apparatus according to claim 14 wherein the mixing element portion includes an opening through which the shaft portion is located to lock into said opening.

16. Mixing apparatus according to claims 14 and 15 wherein the mixing means is assembled onto the lid by first inserting the shaft portion through one end of the lid opening, and then the mixing element portion is locked onto the shaft portion at the opposite end of the shaft.

17. Mixing apparatus according to claim 16 wherein the mixing element portion clips onto the shaft portion and is secured thereto by shoulder means on the shaft portion and/or by welding.

18. Mixing apparatus according to any one of the preceding claims comprising lubrication means to permit the contents of the container, during mixing, to contact and lubricate the co-operating surfaces of the shaft portion and the opening into the lid.

19. Mixing apparatus according to claim 18 wherein the lubrication means includes longitudinal slots in the side walls of the opening which constitute a sleeve for said shaft portion, the slots admitting the container contents to act as lubrication.

20. Mixing apparatus according to any one of the preceding claims wherein the container lid includes a product access opening with closure means, the access opening being for accessing the contents of the container after mixing.

21. Mixing apparatus according to any one of the preceding claims wherein the container lid includes means for holding product arranged to be mixed with material in the container before, during or after operation of the mixing means.

22. Mixing apparatus according to claim 21 wherein the holding means includes a pocket having an opening for introducing said product into the pocket.

23. Mixing apparatus according to claim 21 or 22 wherein the pocket has mesh means for permitting material in the container to enter into the pocket.

24. Mixing apparatus according to claim 21, 22 or 23 wherein the pocket is arranged to contain carbonation or flavouring means for carbonating or flavouring product in the container.